

# Dynamo Automating Coordination with Annotations, Tags and Note Block Keynotes

Alanna Watts, PE

Mechanical Engineer

Brandon Hartley, RA, AIA

Registered Architect





## About the speaker

### Alanna Watts, PE

Alanna is a Mechanical HVAC Design Engineer at Parkhill, Smith and Cooper, Inc. Her passions lie in streamlining tedious processes and saving time. This desire is likely driven by her prior experience in Supply Chain Management at Bell Helicopter. Alanna has been involved with BIM Development at PSC since first joining the team in 2013 and is Autodesk Revit Mechanical Certified. More recently, she spends a portion of her free time trolling twitter for like-minded Dynamo Enthusiast. She likely already follows you.

[@AlannaWatts4](#)



## About the speaker

### Brandon Hartley, RA, AIA

Brandon is an Architect in the Healthcare Sector at Parkhill, Smith and Cooper, Inc. He is a BIM Coordinator and a Revit Architectural Certified Professional who constantly works to find new and better ways to collaborate with all disciplines within the A/E firm. Brandon is an AU veteran and has had the privilege of attending several conferences over the past 10 years. While Brandon generally prefers to reside behind the scenes, this year he hopes to bring AU attendees some of the most interesting nuggets he has learned over the past decade.





PARKHILL SMITH & COOPER

10

OFFICES

**Texas**

Abilene, Amarillo,  
Arlington, Austin, El  
Paso, Frisco, Lubbock,  
Midland

**New Mexico**

Albuquerque, Las Cruces

393

EMPLOYEES

Architectural, Civil  
Structural, Mechanical,  
Electrical, Plumbing,  
Survey

143

ARCHITECTS

Healthcare, K-12,  
Community, Higher  
Education, MEP/S

169

CIVIL ENGINEERS

Aviation, Transportation,  
Water and Wastewater  
Treatment, Water  
Resources,  
Environmental, Site  
Development,  
CPS/CM/Surveying

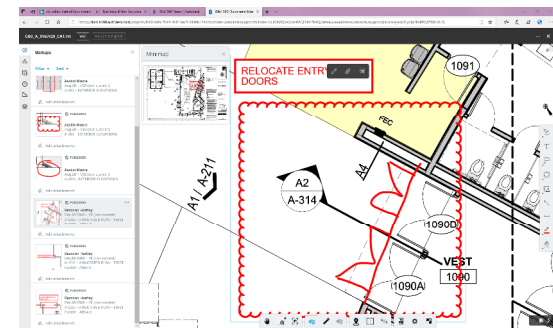
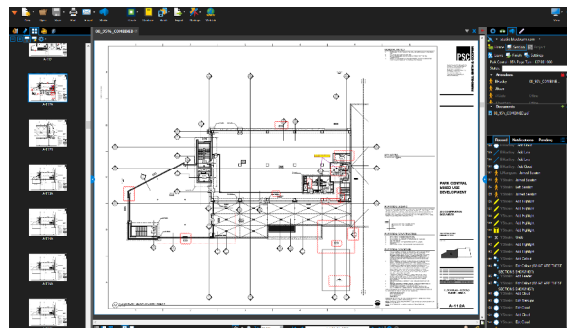
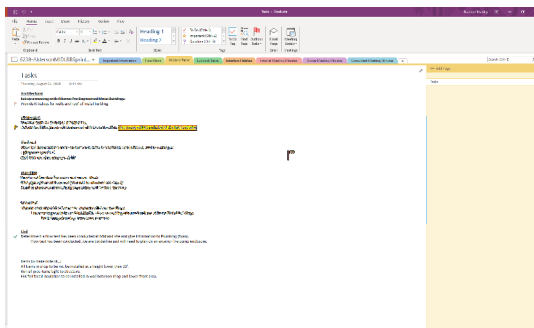
# Agenda

- Introduction
  - 1. Note Comments Coordination
    - ❖ **Scheduling Automation**
  - 2. Note Block Keynotes
  - 3. Mechanical Ductwork Plan Tagging
- Recap

**Get to Dynamo already!**

# Question

- How many of you always find yourself trying to keep track of multiple items that need to be evaluated, designed, and coordinated with a Lead Designer, PA/PM or another discipline?
- How are you currently tracking these items?
  - One Note? \*Bluebeam Session? \*BIM 360 Docs? Company Forms? Sticky Notes...?





# Note Comment Coordination

## (Coordination / Scheduling Automation)

### TASK

#### PART 1

Create a way in which coordination items can be tracked within Revit and exported for use by a PM/PA or another discipline.

### PROCESS

#### PART 2

What does this process look like on an actual project, and how does it function?

- [Note Comments](#)
- [Global Parameters](#)

### DETAIL

#### PART 3

How did this become possible through the use of Dynamo and through the vast Dynamo community?

- [Dynamo Note Comment Slave](#)

### SCHEDULING

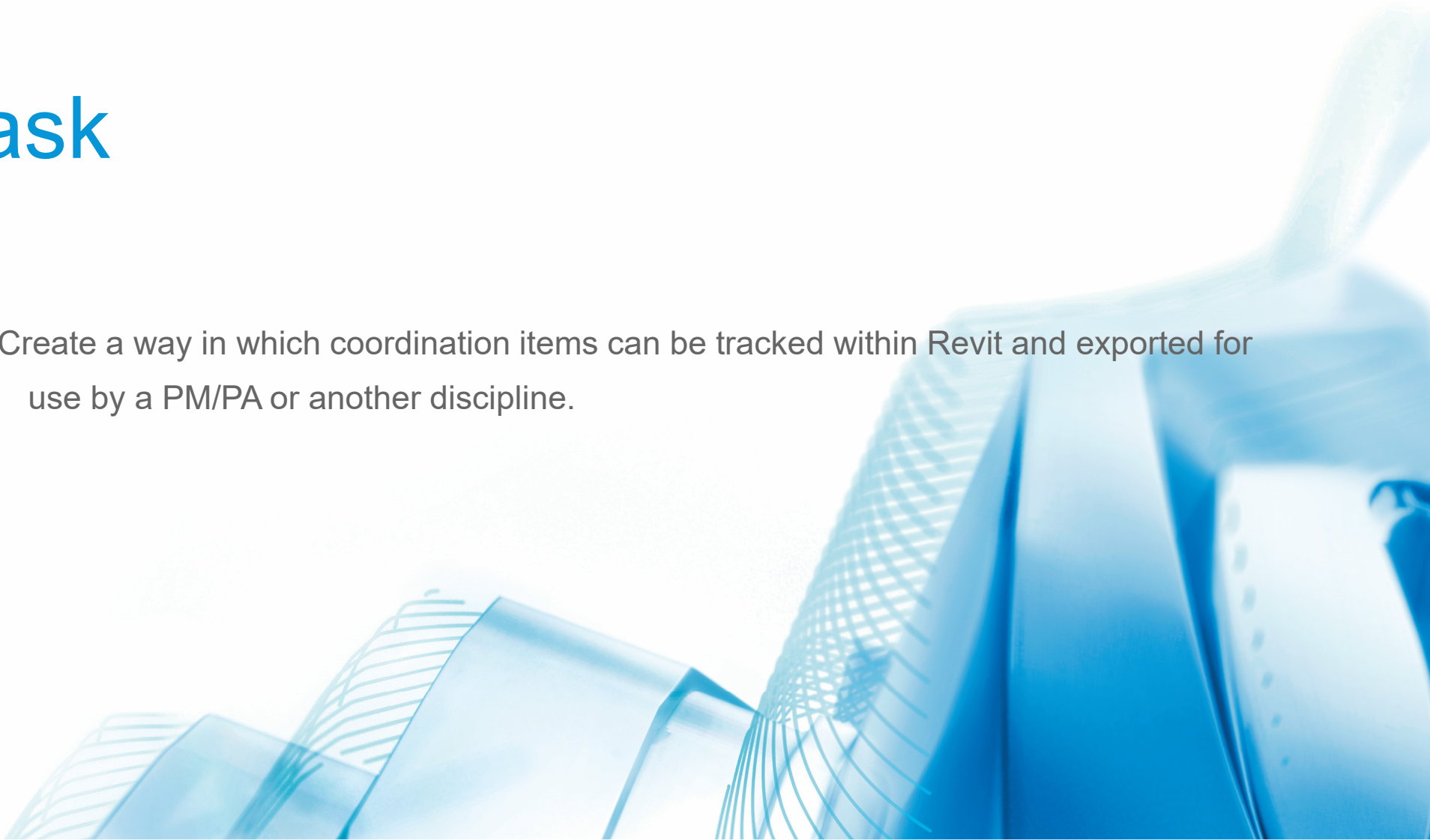
#### PART 4

How was this automated to eliminate the need for a user to keep track of the task?

- [Dynamo Sandbox](#)
  - [Master Script](#)
- [Windows Task Scheduler](#)
  - [DynamoSandbox.exe](#)
  - [DynamoCLI.exe](#)
- [Visual Basic](#)
  - [Schedule Dynamo Sanbox Script](#)

# Task

Create a way in which coordination items can be tracked within Revit and exported for use by a PM/PA or another discipline.



# Process

What does this process look like on an actual project, and how does it function?

➤ Video

Properties

Ceiling Plan

Ceiling Plan: FLR 1 - RCP - AREA A

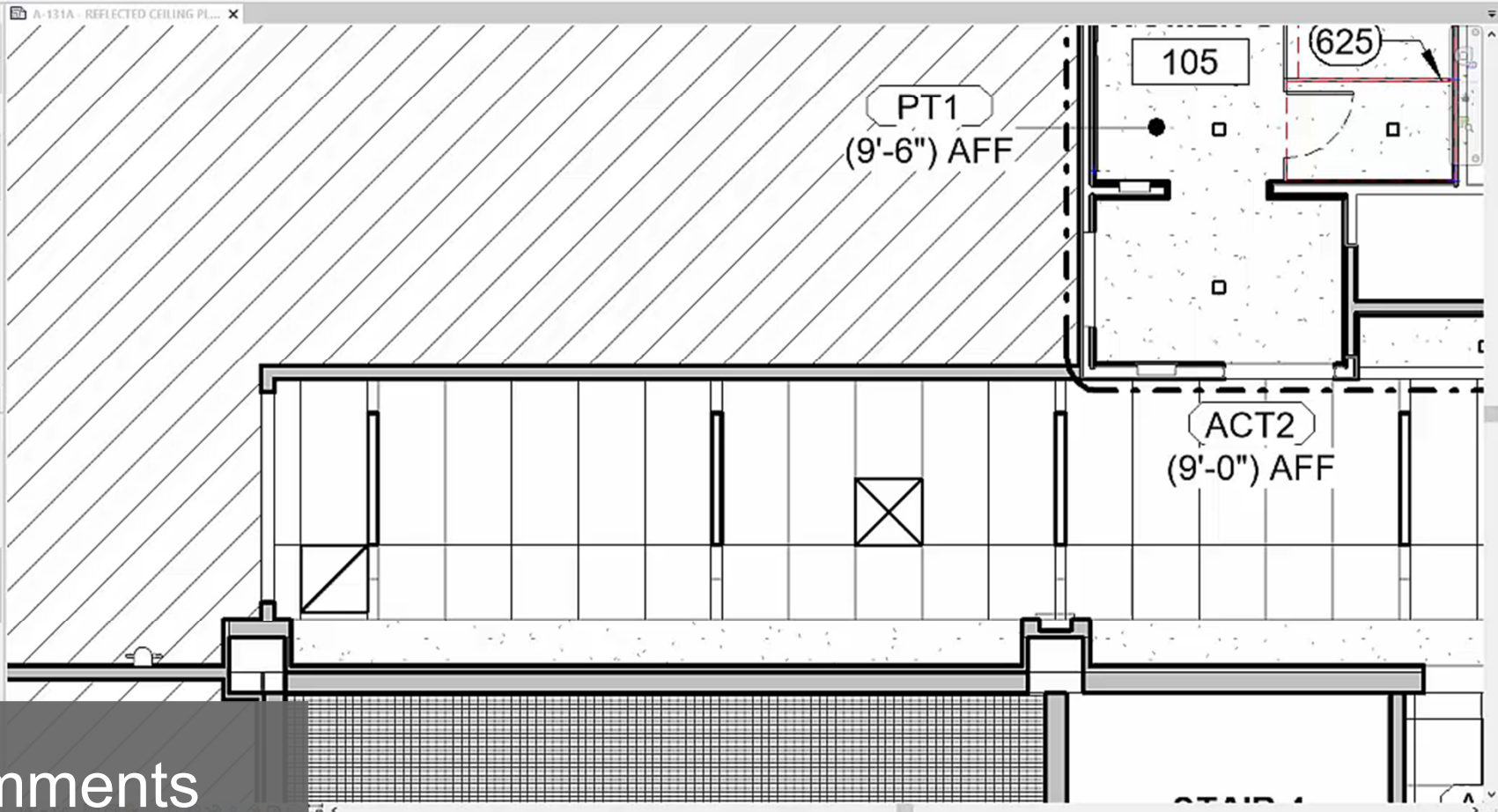
Graphics

View Scale	1/8" = 1'-0"
Scale Value	1
Display Model	Normal
Detail Level	Fine
Parts Visibility	Show Original
Detail Number	A1
Rotation on Sheet	None
Visibility/Graphics Overrides	Edit...
Graphic Display Options	Edit...
Orientation	By Scope Box
Wall Join Display	Clean all wall joins
Discipline	Architectural
Show Hidden Lines	By Discipline
Default Analysis Display Style	None

Apply

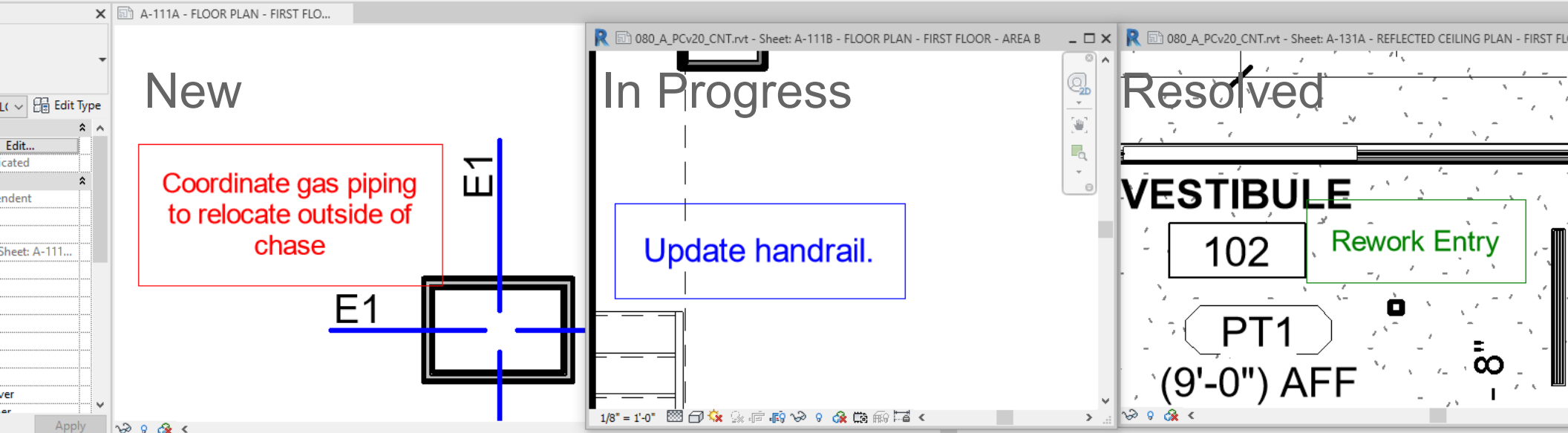
Project Browser - 04\_A\_PCV20\_CNT\_AWatts.rvt

- RESTAURANT Copy 1
- STONE FABRICATION SCHEDULE
- Schedules/Quantities (all)
- Sheets (PSC - CONDENSED SHEET ORGANIZATION)
- 00 - Supplemental Sheets
- CDs
- Architectural
  - A-100 - DEMO
  - A-110 - ANNO/DIM
    - A-110 - FLOOR PLAN - BASEMENT - OVERALL
    - A-110A - FLOOR PLAN - BASEMENT - AREA A
    - A-110B - FLOOR PLAN - BASEMENT - AREA B
    - A-111 - FLOOR PLAN - FIRST FLOOR - OVERALL
    - A-111A - FLOOR PLAN - FIRST FLOOR - AREA A
    - A-111B - FLOOR PLAN - FIRST FLOOR - AREA B
    - A-112 - FLOOR PLAN - SECOND FLOOR - OVERALL
    - A-112A - FLOOR PLAN - SECOND FLOOR - AREA A
    - A-112B - FLOOR PLAN - SECOND FLOOR - AREA B
    - A-113 - FLOOR PLAN - THIRD FLOOR - OVERALL
    - A-113A - FLOOR PLAN - THIRD FLOOR - AREA A
    - A-113B - FLOOR PLAN - THIRD FLOOR - AREA B



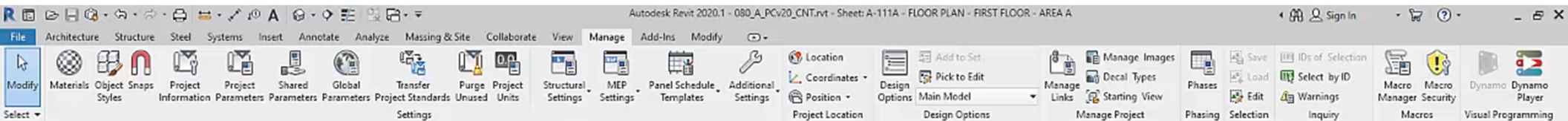
Note Comments





<NOTE COMMENTS>									
A	B	C	D	E	F	G	H	I	
New	In Progress	Resolved	Issue	Detail No.	Notify	Comment By	Revit Response	Excel Response	
<b>Architecture</b>									
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Show existing millwork to be demolished.	A1	Architecture	Brandon			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Show existing millwork to be demolished.	A1	Architecture	Brandon			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Update handrail.	A2	Architecture	Brandon			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Rework Entry	A1	Architecture	Brandon			
<b>Electrical</b>									
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Check that electrical conduit will fit inside of chase	A2	Electrical	Brandon			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ceiling height for restrooms floors 3-6 have been modified to 8' 6".	A1	Electrical	Brandon			
<b>Mechanical</b>									
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Coordinate gas piping to relocate outside of chase	A1	Mechanical	Brandon			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Provide the amount of open frere area required for the cooling tower screen.	A1	Mechanical	Brandon			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Shift this air terminal to be inline with the return diffuser	A1	Mechanical	Brandon			





Properties

Floor Plan

Floor Plan: FLR 1 - ANNO/DIM Edit Type

Graphics

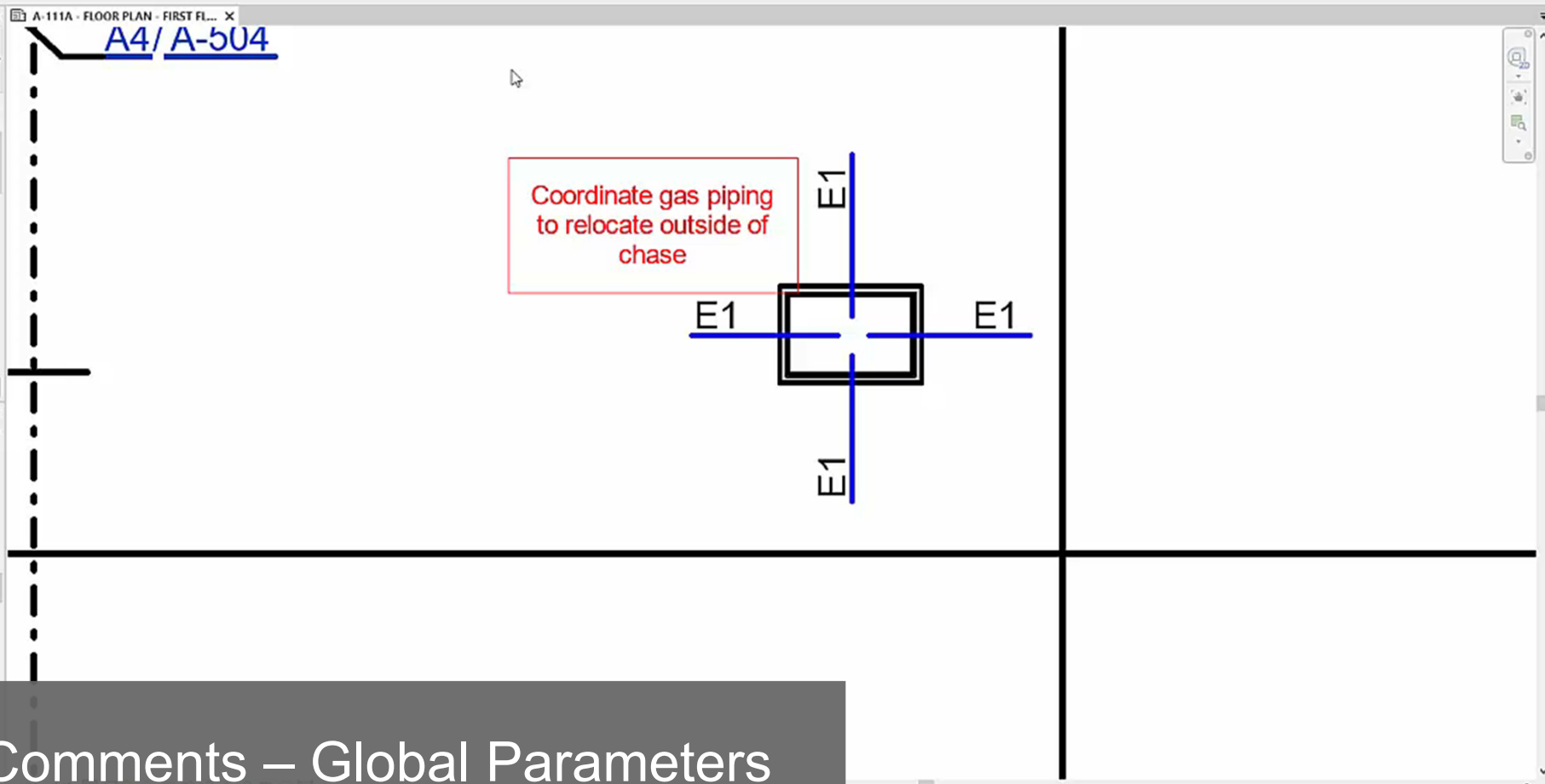
View Scale	1/8" = 1'-0"
Scale Value	1: 96
Display Model	Normal
Detail Level	Fine
Parts Visibility	Show Original
Detail Number	A1
Rotation on Sheet	None
Visibility/Graphics...	Edit...
Graphic Display Op...	Edit...
Orientation	By Scope Box
Wall Join Display	Clean all wall joins
Discipline	Architectural
Show Hidden Lines	By Discipline
Color Scheme Loca...	Background

Properties help Apply

Project Browser - 080\_A\_PCV20\_CNT.rvt

Families

- Air Terminals
- Annotation Symbols
  - 00-NOTE-PSC
    - Note Comment
  - 00-NOTE-PSC1
  - 00-TBLK-SAVE-PSC
  - Automatic Up/Down Direction
  - Detail Item Tag
  - Fixed Up Direction
  - NoteComment
  - PSC\_ARROW
  - PSC\_CALLOUT
  - PSC\_CLIENT\_LOGO\_BLANK
  - PSC\_CODE\_EXIT
  - PSC\_CODE\_EXIT1



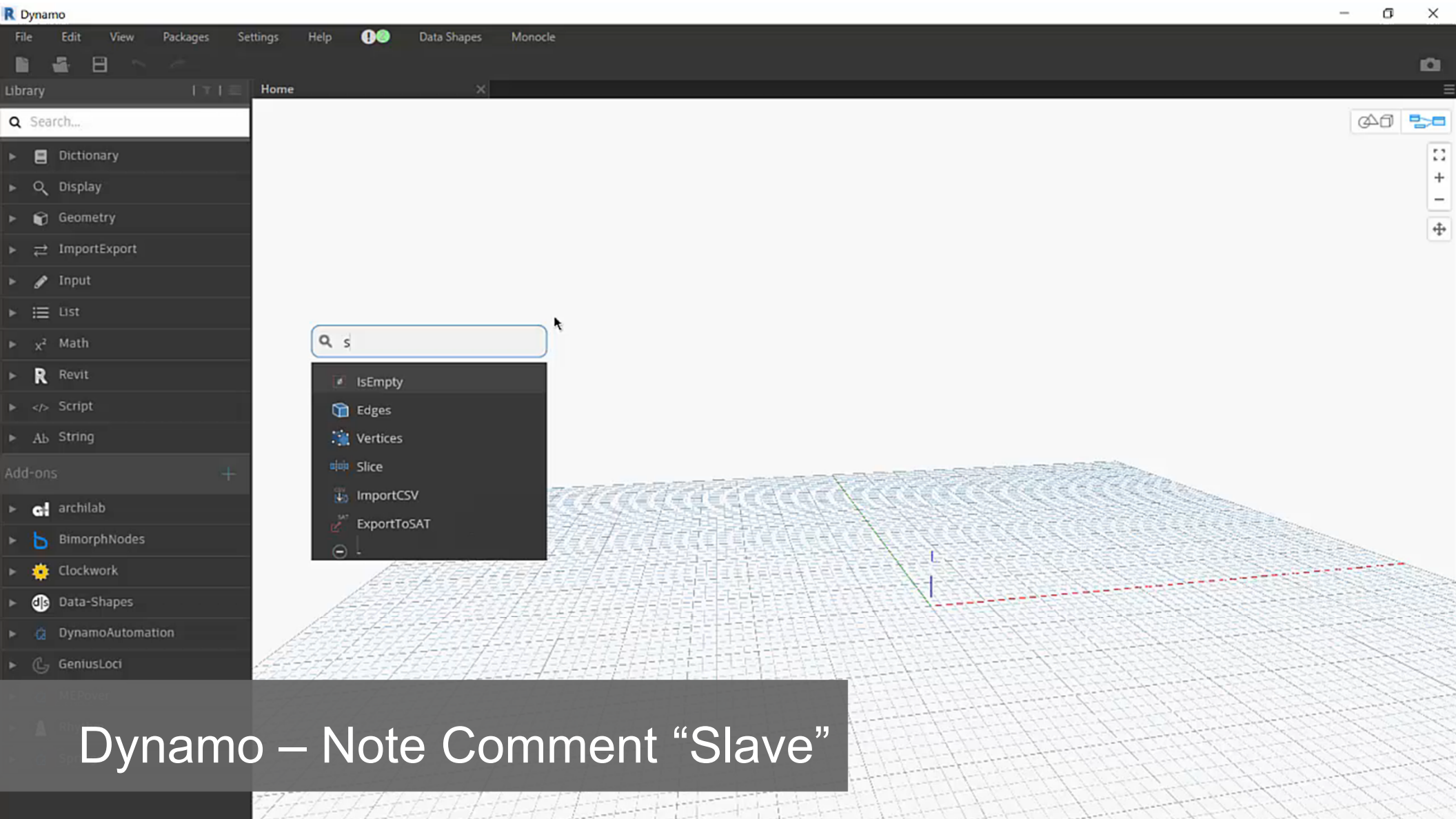
Note Comments – Global Parameters

# Details

How did this become possible through the use of Dynamo and with the help of the vast Dynamo community?

➤ Video

**You're perfect just the way you are,  
and there is room for improvement.  
- Jack Kornfield**





# Scheduling Automation

What if we could schedule pressing the Run button?





# Dynamo Sandbox (Opening Revit Files with Dynamo)

Master Graphs – by **Andreas Dieckmann**

<https://github.com/andydandy74/DynamoAutomation/wiki/Master-Graphs>

1. Inputs
2. Create list of Revit files
3. Create journal files
4. Batch-process Revit files
5. Close Dynamo Sandbox

Inputs

String  
2020 >

String (Revit Local File Location - Be sure this excludes @ symbol)  
C:\Users\lawatts\Desktop  
\\BIMinWork  
\\DynamoSandboxTest >

String (Dynamo Script Location)  
C:\Users\lawatts\Desktop  
\\BIMinWork  
\\DynamoSandboxTest  
\\010\_NoteComment-sync.dyn >

Journal File Name  
DynamoJournalFile >

String (Journal File Location)  
C:\Users\lawatts\Desktop  
\\BIMinWork  
\\DynamoSandboxTest >

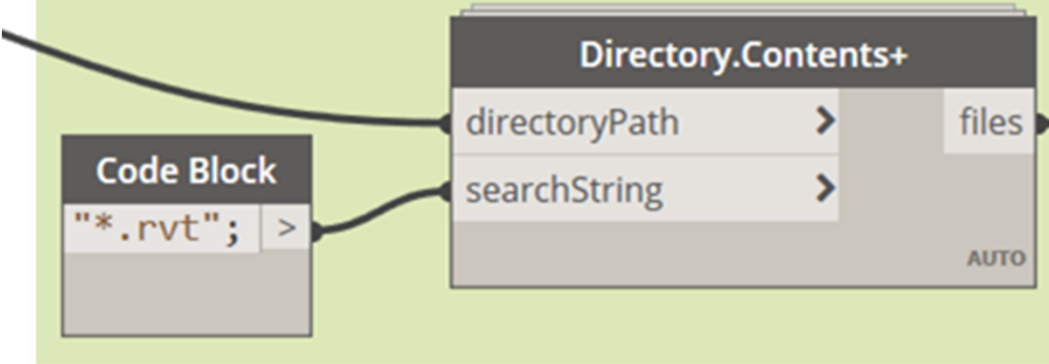
Override Existing Journal File?  
☒ True ☐ False >

Run Journal Files in Debug Mode?  
☒ True ☐ False >

# Inputs

- Revit Version
- Revit Local File Location  
(Excludes @ symbol)
- Dynamo Script Location
- Journal File Name
- Journal File Location
- Override Journal File
- Debug Journal Files

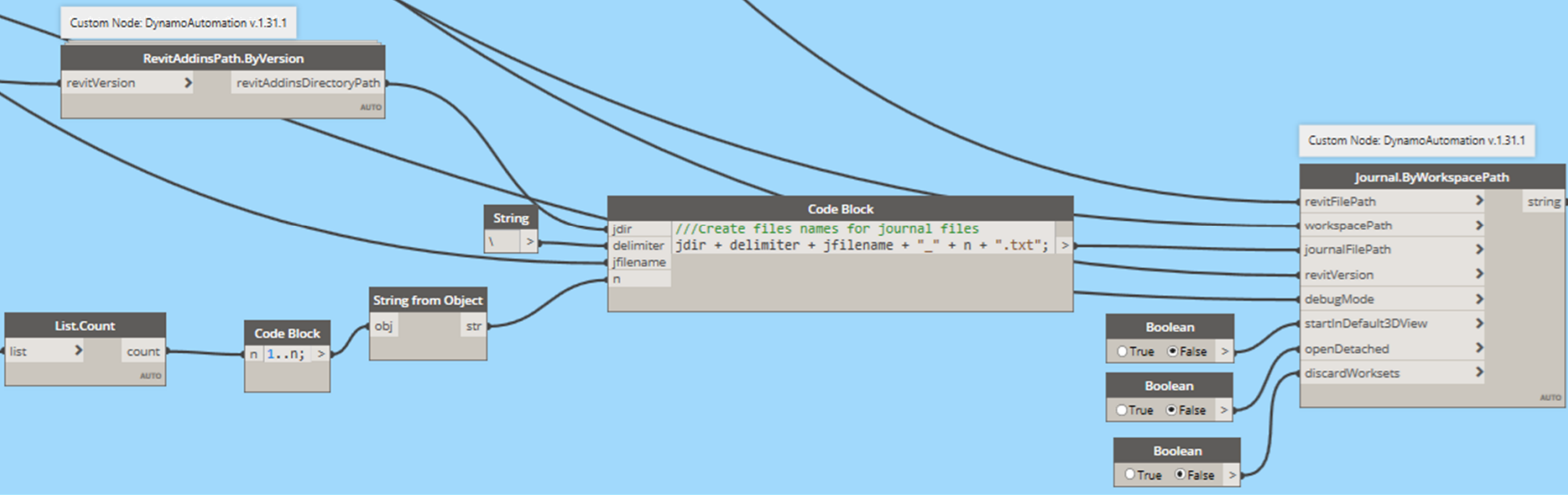
# Create list of Revit Files



# Create list of Revit files

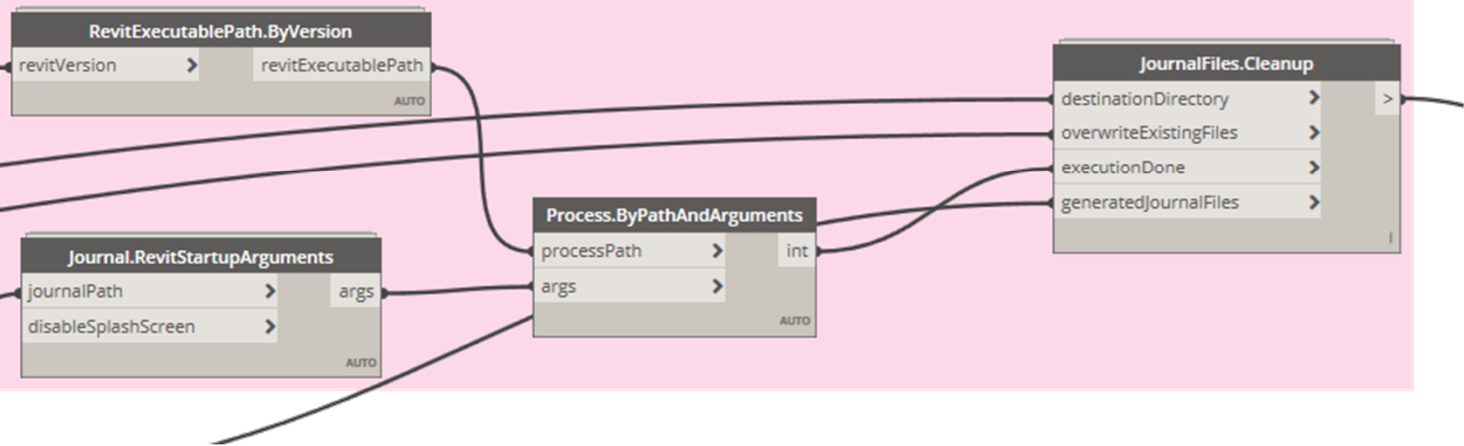
Utilize Clockwork Package **Directory.Contents+** to obtain all the Revit files in that are to be modified.

# Create journal files

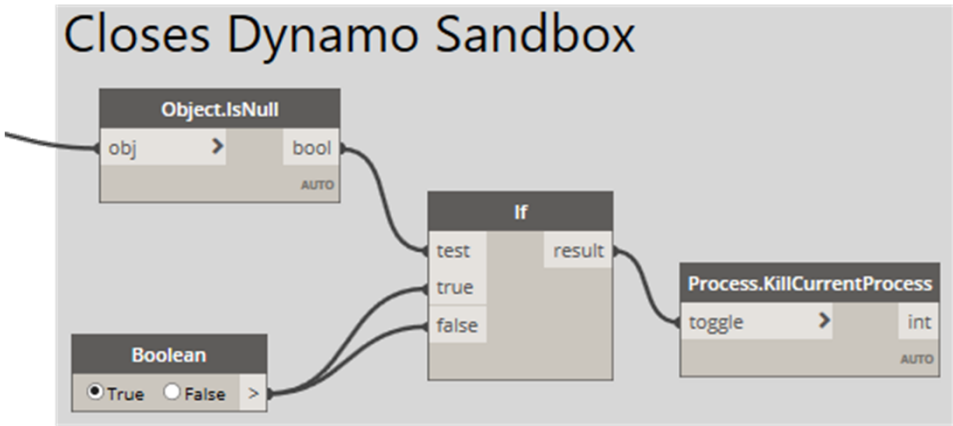


# Journal Files

# Batch Process Revit Files



# Process the Revit files



# Closes the Script

# Task Scheduler

Dynamo Command Line Interface

<https://github.com/DynamoDS/Dynamo/wiki/Dynamo-Command-Line-Interface>

## INHERENT ISSUES WITH USING DYNAMO SANDBOX AND TASK SCHEDULER

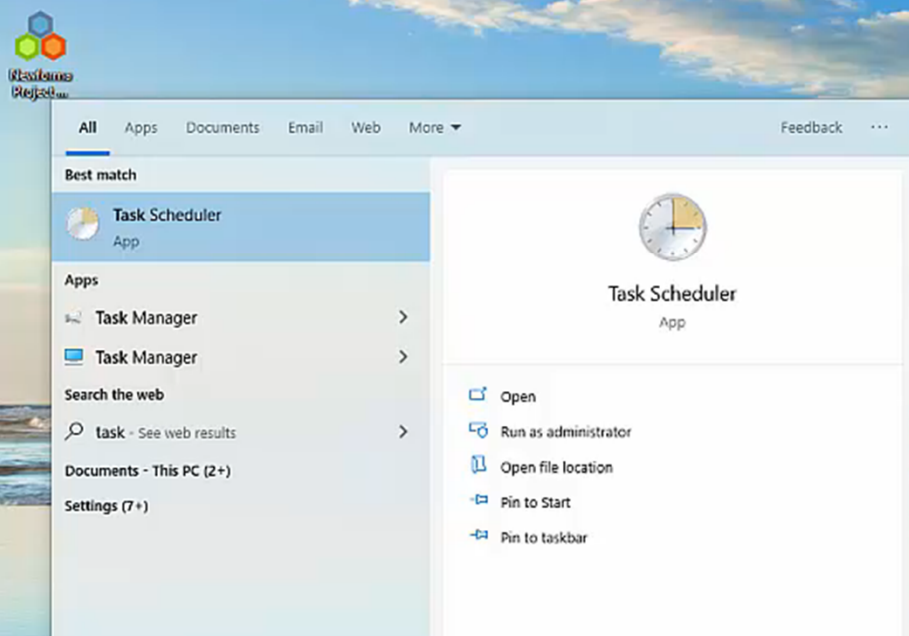
### DYNAMOSANDBOX.EXE

Will not open the specific file

### DYNAMOCLI.EXE

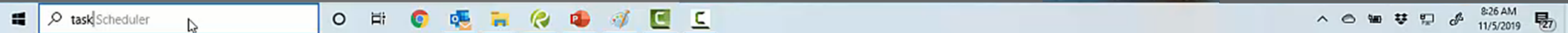
Does not contain all the library components to properly run the Master Script

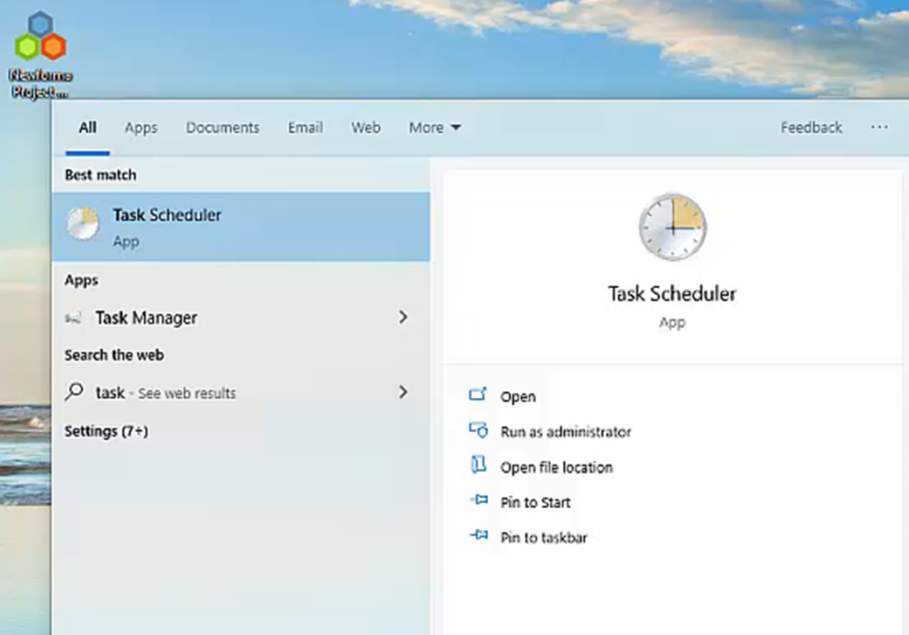




Task Scheduler – DynamoSandbox.exe

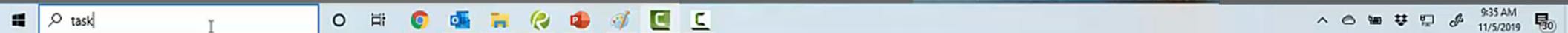
FAIL



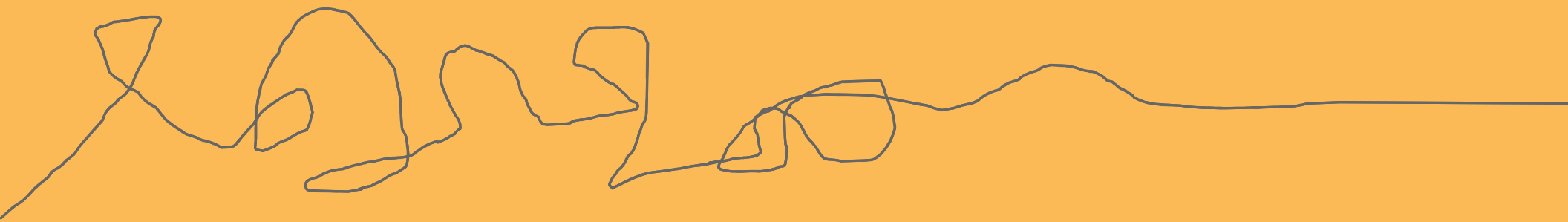


Task Scheduler – DynamoCLI.exe

FAIL



**What have we found that  
works consistently?**



# .vbs – Visual Basics Script

VB Script “Microsoft Visual Basic Scripting Edition”

An Active Scripting language that allows time delays.



Pin to Quick access   Copy   Paste   Cut   Copy path   Paste shortcut

Move to   Copy to   Delete   Rename   New folder   New item   Easy access

Properties   Open   Edit   History   Select all   Select none   Invert selection

Clipboard   Organize   New   Open   Select

← → ↕ ↑ > This PC > Desktop > BIMInWork > DynamoSandboxTest > .vbs

OneDrive

This PC

3D Objects

Desktop

Documents

Downloads

Music

Pictures

Videos

OS (C:)

CAD\_SUPRT (\\data1) (Q:)

stds\_Codes (\\data1) (R:)

specs (\\data1) (S:)

clnt\_lib (\\data1) (V:)

oh (\\data1) (W:)

projects (\\data1) (X:)

AWatts (\\data1\\users) (Y:)

<input type="checkbox"/>	Name	Date modified	Type	Size
<input checked="" type="checkbox"/>	RunDynamoSandbox.vbs	11/13/2019 9:30 PM	VBS File	1 KB

**Open**

Edit with Notepad++

Bulk Rename Here

Send with Transfer...  
Move to Dropbox

Share  
Open with >  
Give access to >  
Restore previous versions

Send to >

Cut

Copy

Create shortcut

Delete

Rename

C:\Users\awatts\Desktop\BIMInWork\DynamoSandboxTest\VBScript\DynamoSandboxTest\Notepad++ [Administrator]

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

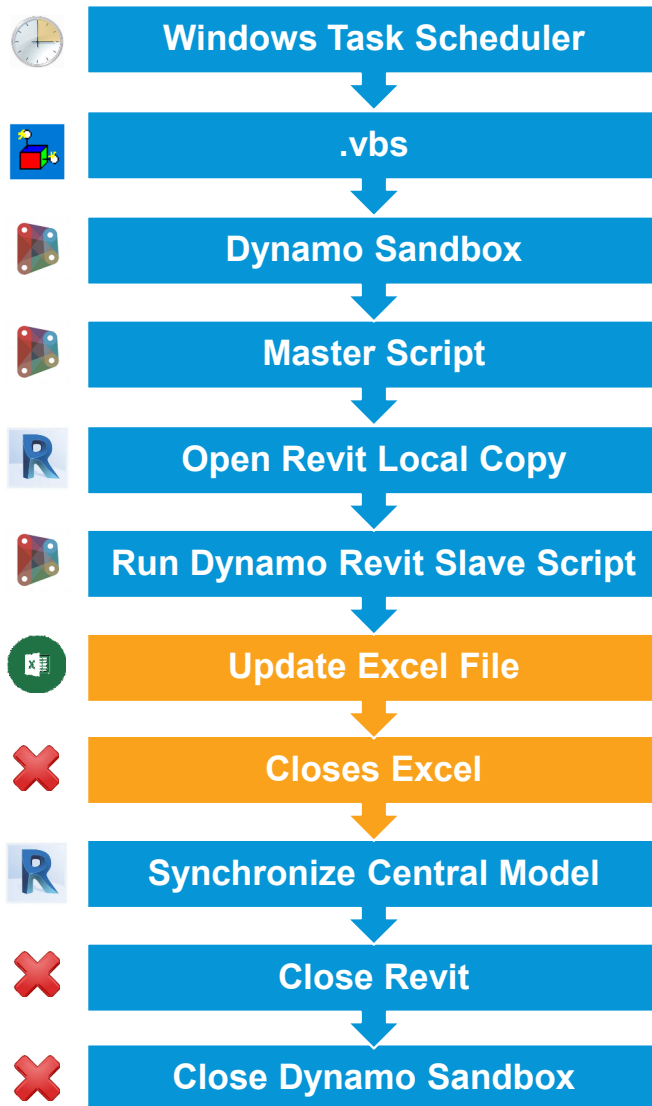


RunDynamoSandbox.vbs

```
1 Dim objShell
2 Set objShell = WScript.CreateObject( "WScript.Shell" )
3 objShell.Run("""C:\Program Files\Dynamo\Dynamo Core\2\DynamoSandbox.exe""")
4 wscript.sleep 10000
5 objShell.AppActivate "DynamoSandbox"
6 wscript.sleep 10000
7 objShell.SendKeys "(% )(R) "
8 wscript.sleep 5000
9 objShell.SendKeys "(% )(X) "
10 wscript.sleep 10000
11 objShell.SendKeys "^o"
12 objShell.SendKeys "{TAB}{TAB}{TAB}{TAB}{TAB}{TAB}{ENTER}"
13 objShell.SendKeys "C:\Users\awatts\Desktop\BIMInWork\DynamoSandboxTest"
14 objShell.SendKeys "{ENTER}"
15 wscript.sleep 5000
16 objShell.SendKeys "{TAB}{TAB}{TAB}{TAB}{TAB}"
17 objShell.SendKeys "MasterScriptNoteComment2020.dyn{ENTER}"
18 objShell.SendKeys "{ENTER}"
19 wscript.sleep 10000
20 objShell.SendKeys "{F5}"
21
```



.vbs





# Scheduling Automation

Demonstration

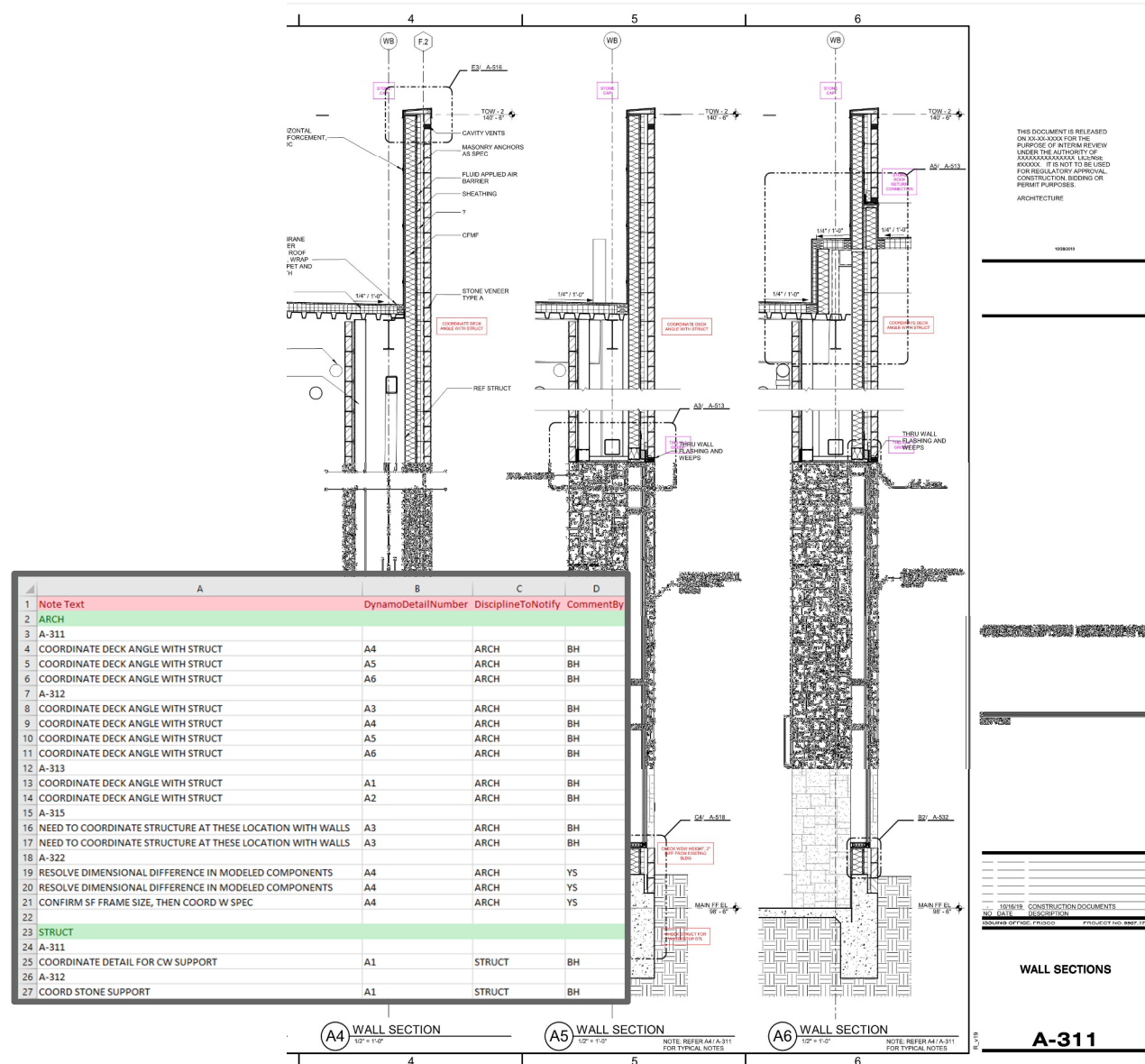
➤ Video





# Recap

- Created a way where Generic Annotation (Note Comments) families can be used to keep track of coordination items within Revit.
- Dynamo leveraged to locate the Note Comments within a View and on a Sheet.
- Excel file exported for non-Revit users.
- Dynamo was scheduled to run during off hours.



**We suffer more often in  
imagination than in reality.  
-Seneca**

## Question

- How many of you are using Note Block Keynotes when annotating your MEP sheets?
  - **Have you come across any problems when using the Note Block Keynotes methods on plans with multiple areas?**



# Note Block Keynotes

## (Quality Control)

### TASK

---

#### PART 1

Create a way in which  
Keynotes placed in views will  
show only on the sheets in  
which they are visible.

- [Note Block Keynotes \(Views\)](#)
- [Note Block Keynotes \(Sheets\)](#)

### PROCESS

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#### PART 2

What does this process look  
like on an actual project, and  
how does it function?

### DETAIL

---

#### PART 3

How did this become possible  
through the use of Dynamo  
and through the vast Dynamo  
community?

- [Dynamo Detail](#)

### AUTOMATION

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#### PART 4

# Task

Create a way in which Keynotes placed in views will show only on the sheets in which they are visible.

➤ Video (The problem with Note Block Keynotes)

Autodesk Revit 2020.1 - 120\_MP\_PCv20\_CNT\_AWatts.rvt - Sheet: P-112A - PLUMBING PLAN - SECOND FLOOR - AREA A

File Architecture Structure Steel Systems Insert Annotate Analyze Massing & Site Collaborate View Manage Add-Ins Modify

Modify Select Build Circulation Model Room & Area Opening Datum Work Plane

Properties

Sheet

Sheet: PLUMBING PLAN - SECOND FLOOR - / Edit Type

Graphics

Visibility/Graphics Overrides Edit... Scale 1/8" = 1'-0"

Identity Data

Dependency Independent

Referencing Sheet

Referencing Detail

Workset View "Sheet: P-112A - PLU..."

Edited by

Current Revision Issued

Current Revision Issued By

Current Revision Issued To

Current Revision Date 7/25/2019

Current Revision Description CCR 004

Project Browser - 120\_MP\_PCv20\_CNT\_AWatts.rvt

Schedules/Quantities (all)

- AIR COMPRESSOR SCHEDULE
- AIR DISTRIBUTION SCHEDULE
- AIR DOOR SCHEDULE
- AIR HANDLING UNIT SCHEDULE
- AIR ROTATION INDOOR UNIT SCHEDULE
- AIR ROTATION OUTDOOR CONDENSING UNIT SCHEDULE
- ARCHITECTURAL
- BOOSTER PUMP SCHEDULE
- CALC\_DEMAND CONTROL VENTILATION REQUIRED
- CALC\_DUCT SCHEDULE
- CALC\_HVAC LOADS BY ZONE
- CALC\_MIN TDH
- CALC\_MIN TDH BY ZONE
- CALC\_ROTATION INDOOR UNIT SCHEDULE
- CALC\_ROTATION OUTDOOR CONDENSING UNIT SCHEDULE

6"

6"

9

# Note Block Keynotes on Floor Plans

Editable Only

9:06 PM 10/28/2019

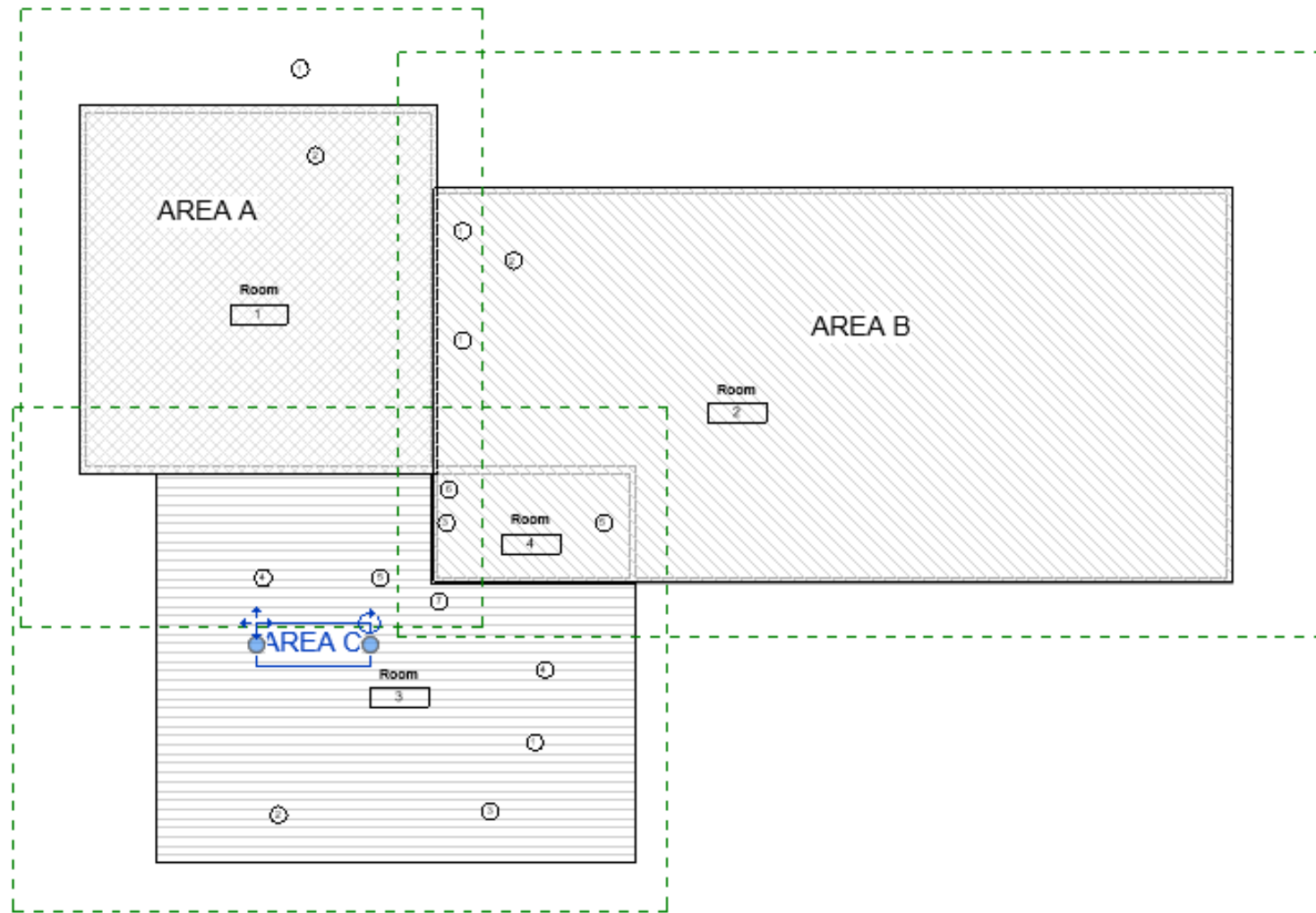


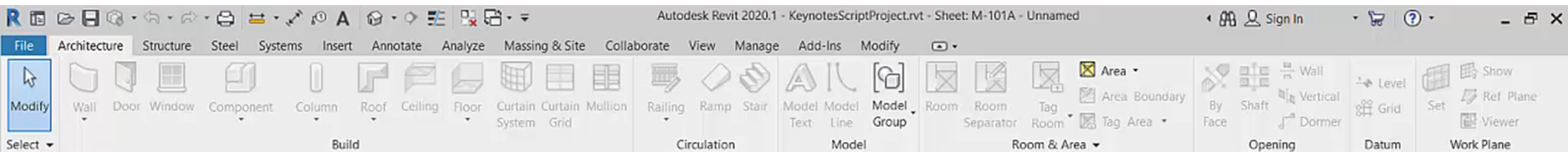


# Process

What does this process look like on an actual project, and how does it function?

➤ Video





Properties

Keynote Check M-101A M-101A - Unnamed

Floor Plan

Floor Plan: Area A Edit Type

Graphics

View Scale 1/8" = 1'-0"

Scale Value 1: 96

Display Model Normal

Detail Level Medium

Parts Visibility Show Original

Detail Number 1

Rotation on Sheet None

Visibility/Graphics Edit...

Graphic Display Op... Edit...

Orientation Project North

Wall Join Display Close all wall joins

Properties help Apply

Project Browser - KeynotesScriptProject.rvt

+- Ceiling Plans

+- 3D Views

+- Elevations (Building Elevation)

+- Plumbing

+- Legends

+- Schedules/Quantities (all)

+- Keynote Check

+- M-101A

+- M-101B

+- M-101C

+- Space Outdoor Air Schedule

+- Sheets

+- M-101A - Unnamed

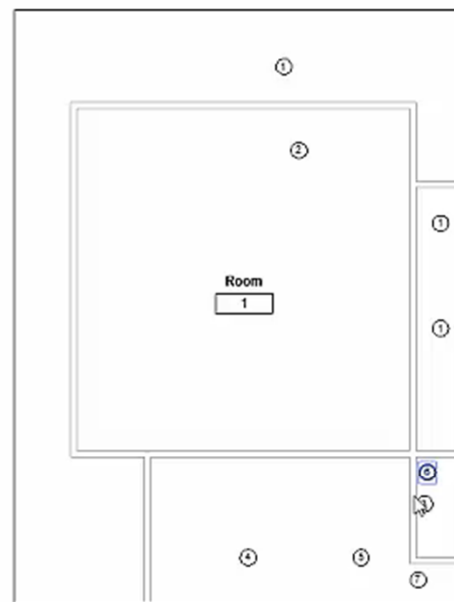
+- M-101B - Unnamed

+- M-101C - Unnamed

+- Families

+- Groups

+- Detail Links



### KEY NOTES

AS INDICATED BY: ②

1. This is a note.
2. This is a note.
3. This is a note.
4. This is a note.
5. This is a note.
6. This is a note.
7. This is a note.

1 Area A  
1/8" = 1'-0"

1

# Hide Keynotes

Owner	
Project Name	
Unnamed	
Project Number	Project M
Date	ISSU
Drawn By	
Checked By	C
M-101A	
Scale	1/8"



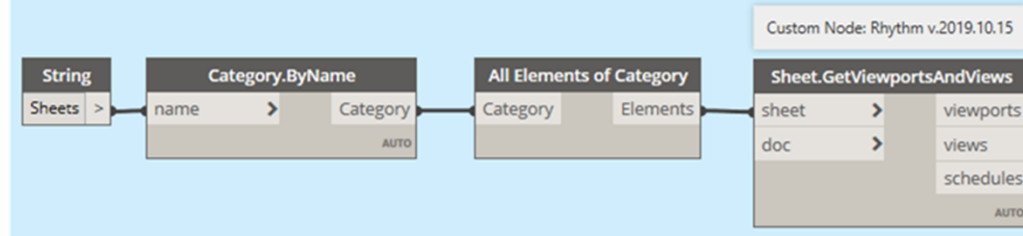


# Detail

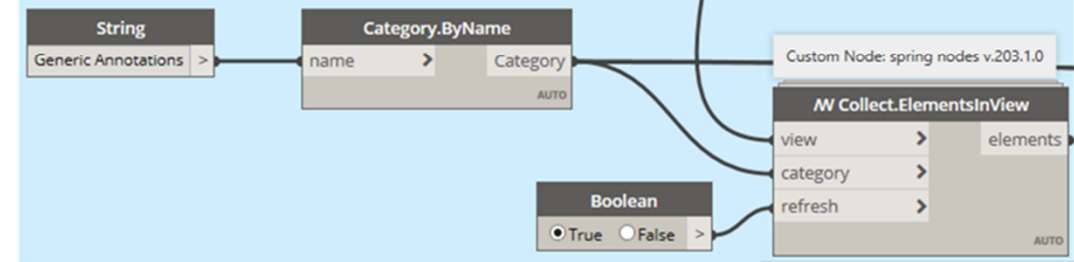
How did this become possible through the use of Dynamo and through the vast Dynamo community?

➤ Video

## Get all Views on Sheets



## Get a List of All Generic Annotations in these Views

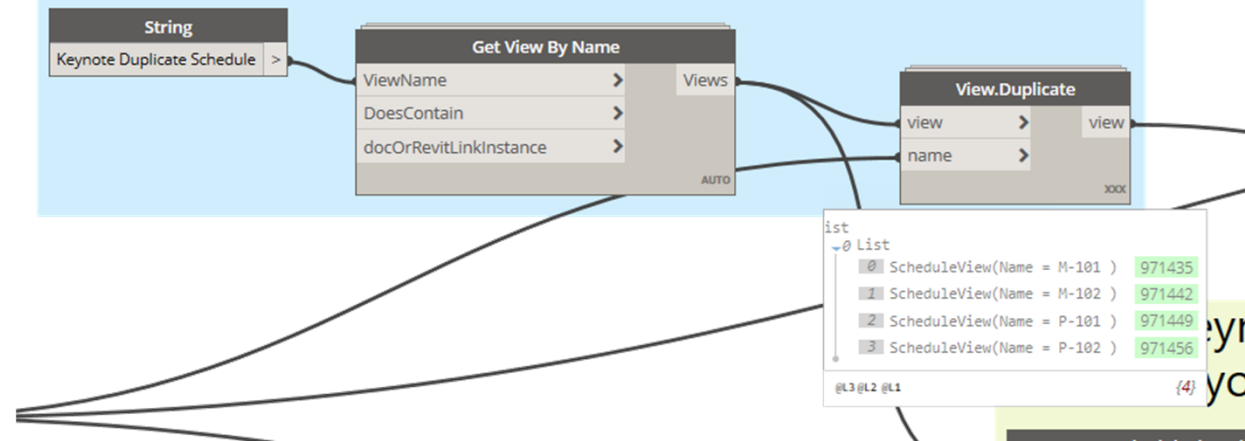


## Dynamo - Hide Keynotes

Every Generic Annotation on each Sheet Selected is processed, which can take a lot of time



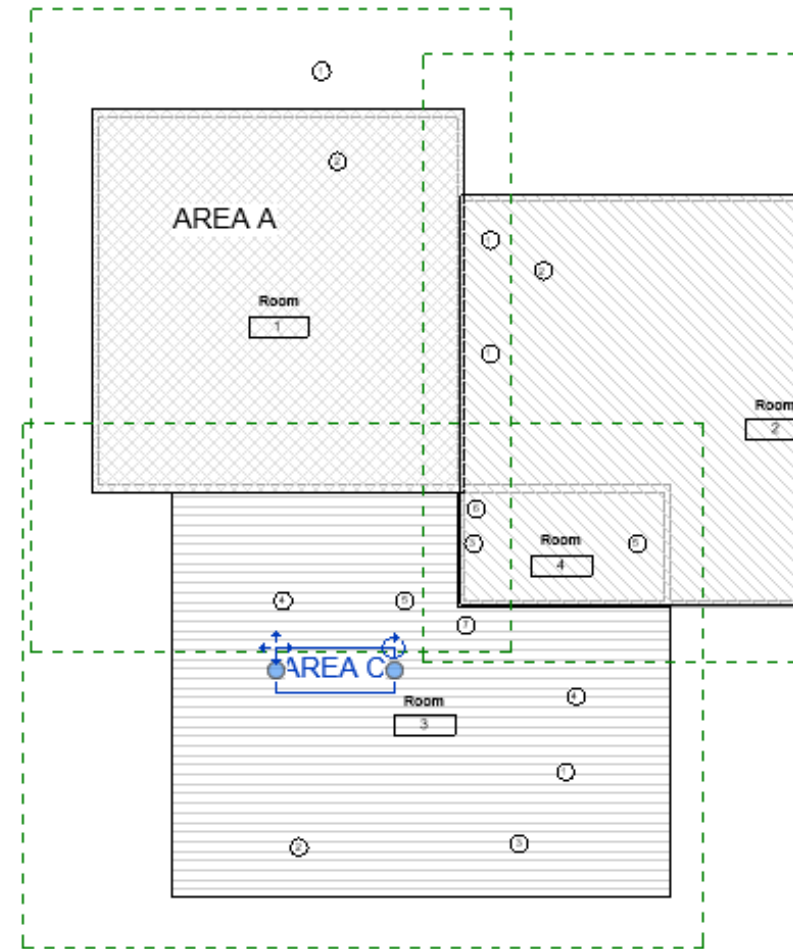
Get the Schedule you wish to Copy and Duplicate that Schedule



Dynamo – Label Keynotes and Place on Sheets

# Recap

- Created a way where Note Block Keynotes could be checked for quality control to ensure appropriate visibility.
- Dynamo used to solve issue where Note Block Keynotes may appear on multiple dependent views.
- Dynamo used to place Note Block Schedules on associated sheets automatically reducing user effort.



## Question

For the engineers in the room, how often do you find yourself fighting to find a legible location to locate mechanical equipment, spaces and air terminal tags?

- **Would it be beneficial if you could use Dynamo to help with the initial location of these tags to reduce your up-front time commitment?**

# Mechanical Ductwork Tags

## (Quality Control / Time)

### TASK

#### PART 1

Create a way in which Mechanical tags would be placed in a view at a location where they would be visible and not overlap any nearby objects.

### PROCESS

#### PART 2

What does this process look like on an actual project, and how does it function?

- ✓ [Tag Mechanical Ductwork Plans](#)

### DETAIL

#### PART 3

How did this become possible through the use of Dynamo and through the vast Dynamo community?

- [Dynamo Detail \(Video\)](#)
  - ❖ [Tag Mechanical Ductwork Plans](#)
- [Discussion](#)

### AUTOMATION

#### PART 4

# Task

Create a way in which Mechanical tags would be placed in a view at a location where they would be visible and not overlap any nearby objects.

Video (The problem with using Tag All...)



# Tag Plans

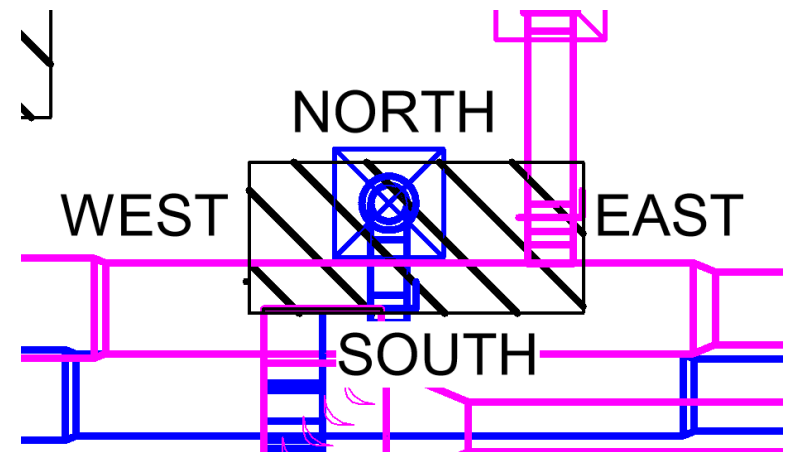
↑ North → East ← West ↓ South

## Priority

Mechanical Equipment

→ Spaces

→ Air Terminals



Autodesk Revit 2020.1 - TagScript20.rvt - Sheet: M-111 - MECHANICAL PLAN

File Architecture Structure Steel Systems Insert Annotate Analyze Massing & Site Collaborate View Manage Add-Ins Modify

Select Modify Wall Door Window Component Column Roof Ceiling Floor Curtain System Curtain Grid Mullion Railing Ramp Stair Model Text Model Line Model Group Room Room Separator Tag Room Area Area Boundary Area Tag Area By Face Shaft Vertical Wall Level Grid Set Ref Plane Show Ref Plane Viewer Work Plane

Properties

M-111 - MECHANICAL PLAN

Floor Plan

Floor Plan: MECHANICAL FLOC Edit Type

Graphics

View Scale	1/8" = 1'-0"
Scale Value	96
Display Model	Normal
Detail Level	Medium
Parts Visibility	Show Original
Detail Number	A1
Rotation on Sheet	None
Visibility/Graphics ...	Edit...
Graphic Display Op...	Edit...
Orientation	By Scope Box
Wall Join Display	Clean all wall joins

Properties help Apply

Project Browser - TagScript20.rvt

- Views (MEP Standard Views)
- Legends
- Schedules/Quantities (01 - MP STANDARDS)
- 01\_Project Setup
  - Coordination
  - Project Setup
    - Level Schedule
    - Space Schedule
  - Revisions
    - Sheet List - Revisions
- 02\_Calculation
- 03\_Schedules
- Fire Protection

Tag Mechanical Ductwork Plan Issues

Click to select, Tab for alternates, CTRL adds, SHIFT unselects.

Type here to search

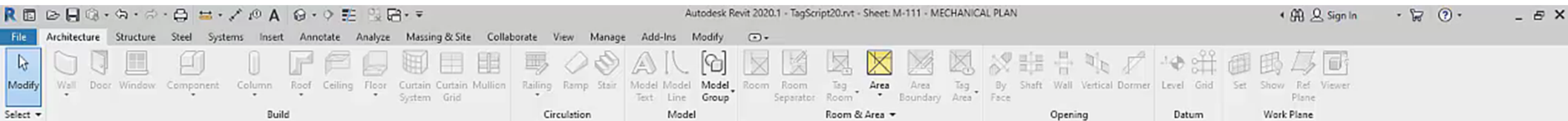
8:02 PM 11/8/2019



# Process

What does this process look like on an actual project, and how does it function?





Properties

Sheet

Sheet: MECHANICAL PLAN

Graphics

Visibility/Graphics Overrides

Scale: 1/8" = 1'-0"

Identity Data

Dependency: Independent

Referencing Sheet

Referencing Detail

Current Revision Issued

Current Revision Issued By

Current Revision Issued To

Current Revision Date

Current Revision Description

Current Revision

Approved By

Designed By

Properties help

Apply

Project Browser - TagScript20.rvt

Views (MEP Standard Views)

Legends

Schedules/Quantities (01 - MP STANDARD SCHEDULE ORGANIZATION)

01\_Project Setup

Coordination

Project Setup

Level Schedule

Space Schedule

Revisions

Sheet List - Revisions

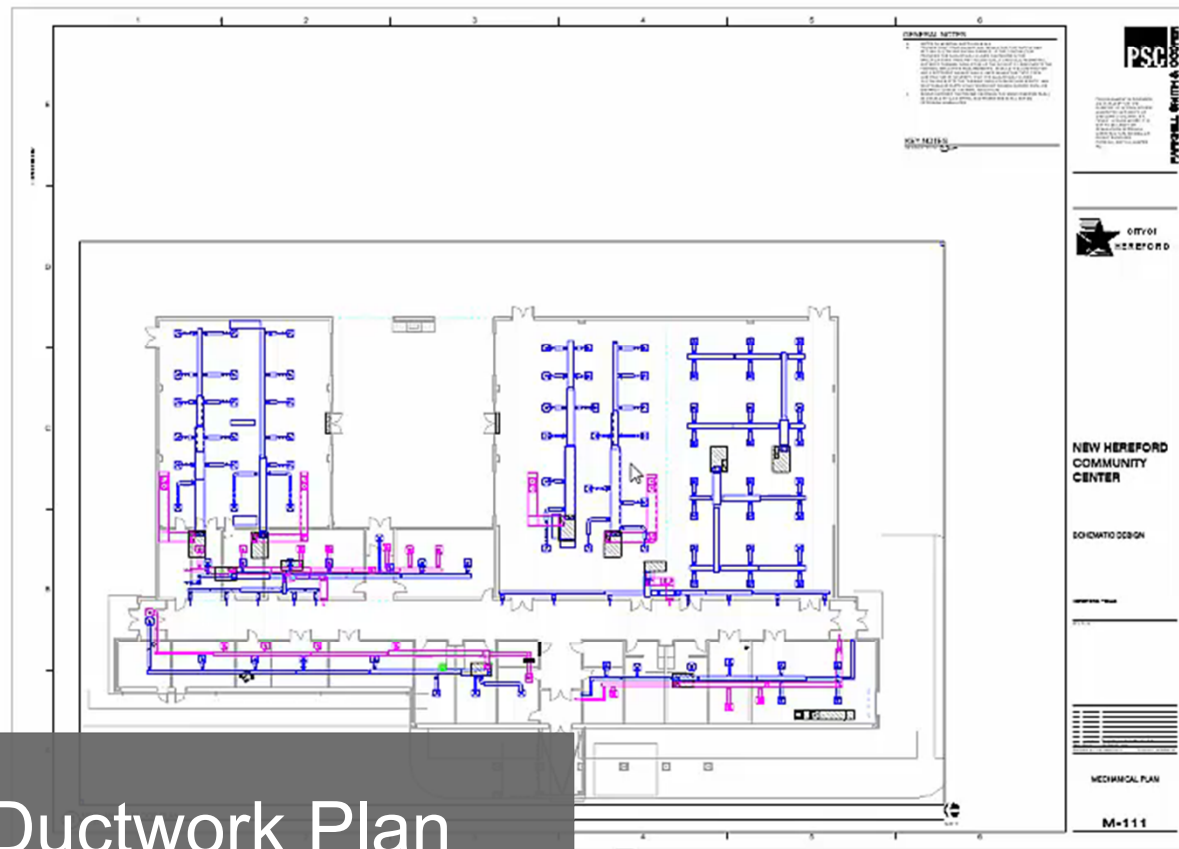
02\_Calculation

03\_Schedules

Fire Protection

Mechanical

01\_Standard



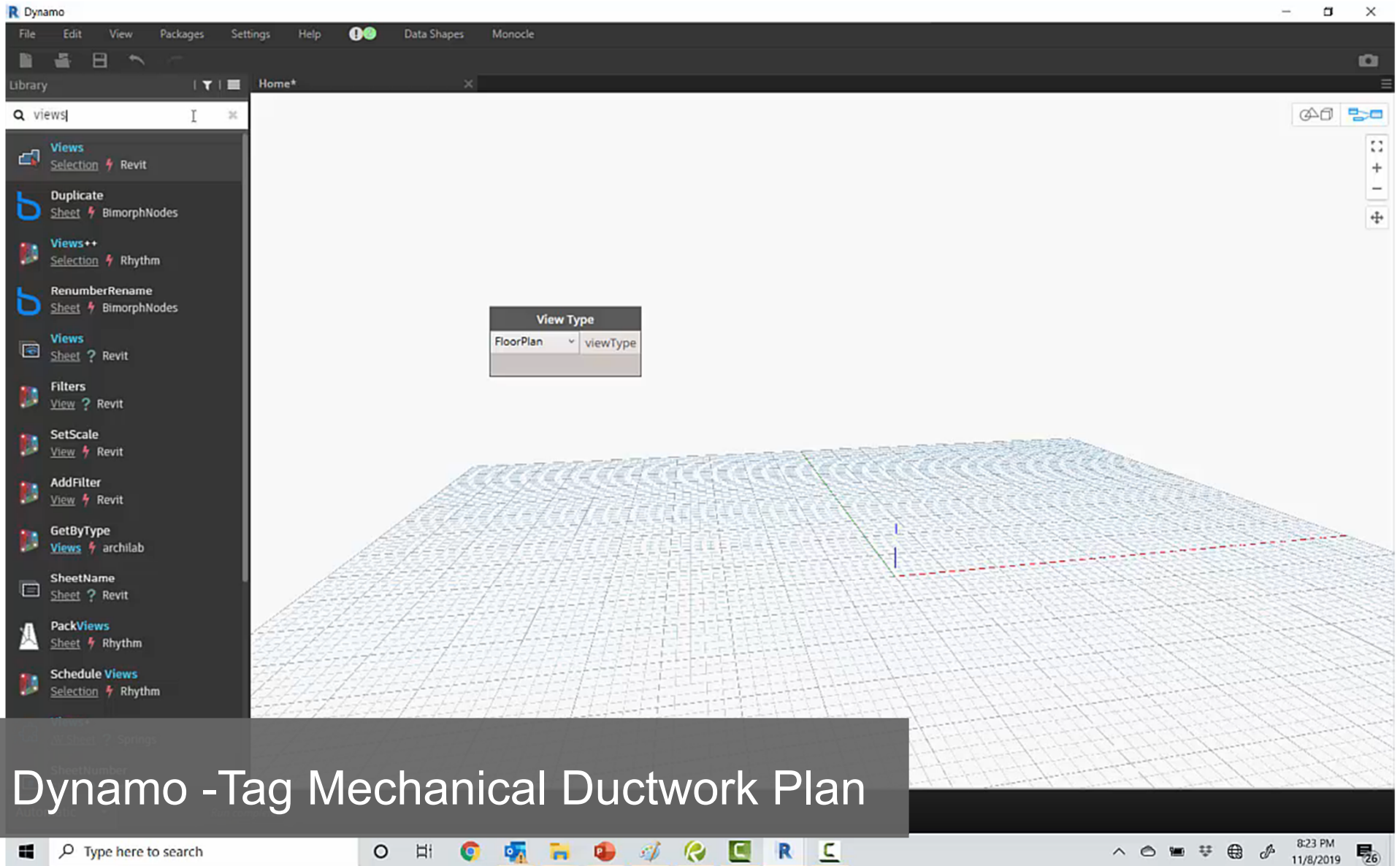
# Tag Mechanical Ductwork Plan

# Detail

How did this become possible through the use of Dynamo and through the vast Dynamo community?

➤ Video





Modify Select ▾ Materials Object Styles Project Parameters Transfer Project Standards Structural Settings ▾ MEP Settings ▾ Panel Schedule Templates ▾ Additional Settings ▾ Project Location Design Options Add to Set Pick to Edit Main Model Design Options Manage Project Phasing Selection Inquiry Macros Visual Programming Dynamo Dynamo Player

Properties

Floor Plan

Floor Plan: MECHANICAL FLOC ▾ Edit Type

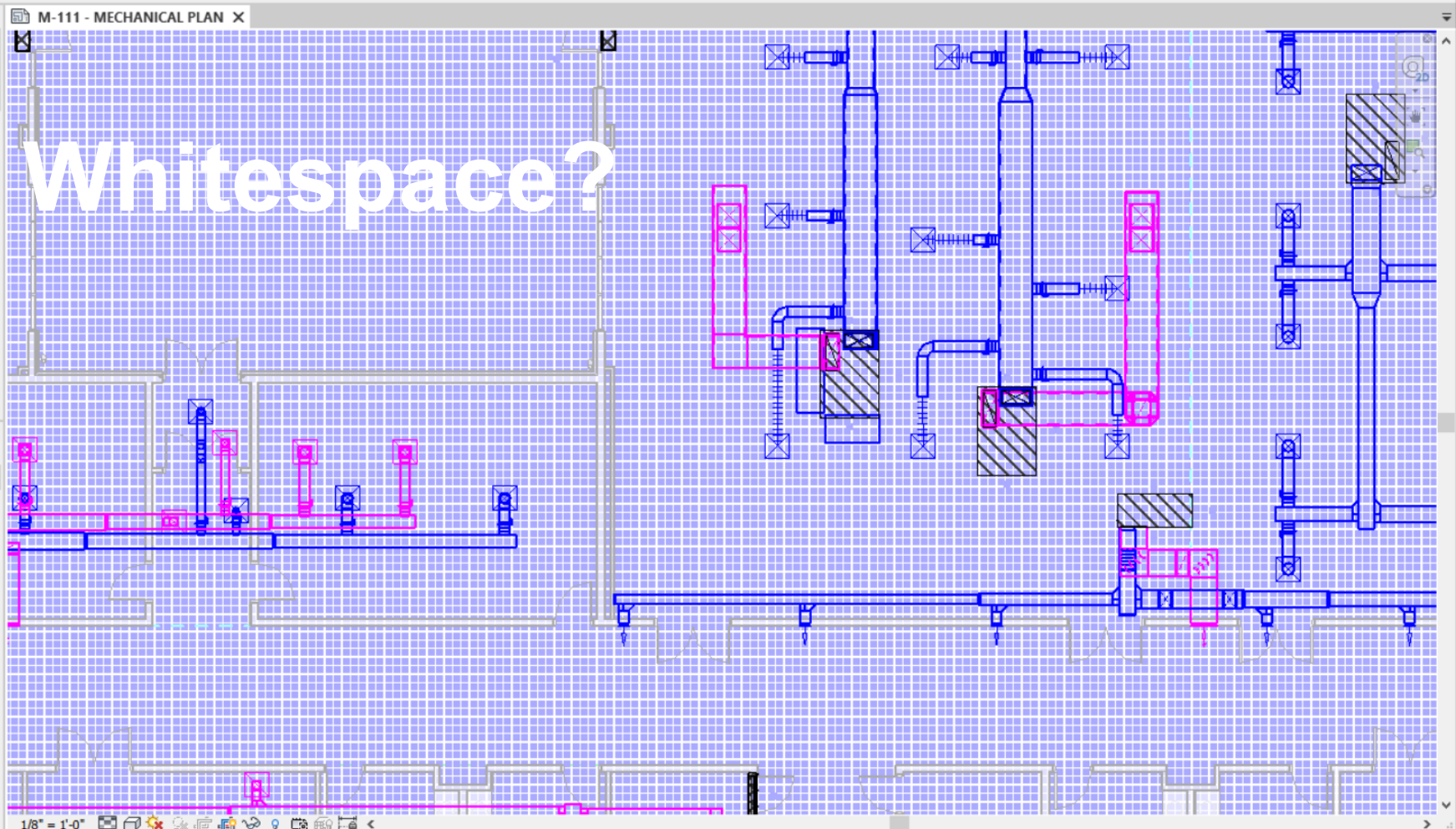
Graphics

View Scale	1/8" = 1'-0"
Scale Value 1:	96
Display Model	Normal
Detail Level	Medium
Parts Visibility	Show Original
Detail Number	A1
Rotation on Sheet	None
Visibility/Graphics ...	Edit...
Graphic Display Op...	Edit...
Orientation	By Scope Box
Wall Join Display	Clean all wall joins

Properties help Apply

Project Browser - TagScript20.rvt

- Views (MEP Standard Views)
- Legends
- Schedules/Quantities (01 - MP STANDARDS)
  - 01\_Project Setup
    - Coordination
      - Project Setup
        - Level Schedule
        - Space Schedule
      - Revisions
        - Sheet List - Revisions
  - 02\_Calculation
  - 03\_Schedules
    - Fire Protection
    - Mechanical
      - 01\_Standard
        - AIR COMPRESSOR SCHEDULE
        - AIR COOLED CHILLER SCHEDULE
        - AIR DOOR SCHEDULE





The image is a screenshot of the Dynamo software interface. On the left is a 'Library' panel with a search bar and a list of categories: Dictionary, Display, Geometry, ImportExport, Input, List, Math, Revit, Script, and String. Below these are 'Add-ons' including archilab, BimorphNodes, Clockwork, Data-Shapes, DynamoAutomation, GeniusLocI, MEPover, Rhythm, and Springs. The main workspace shows a visualization of a point cloud, which is a dense collection of black dots forming a curved, bowl-like shape. Overlaid on this visualization is a large text box containing the following statistics:

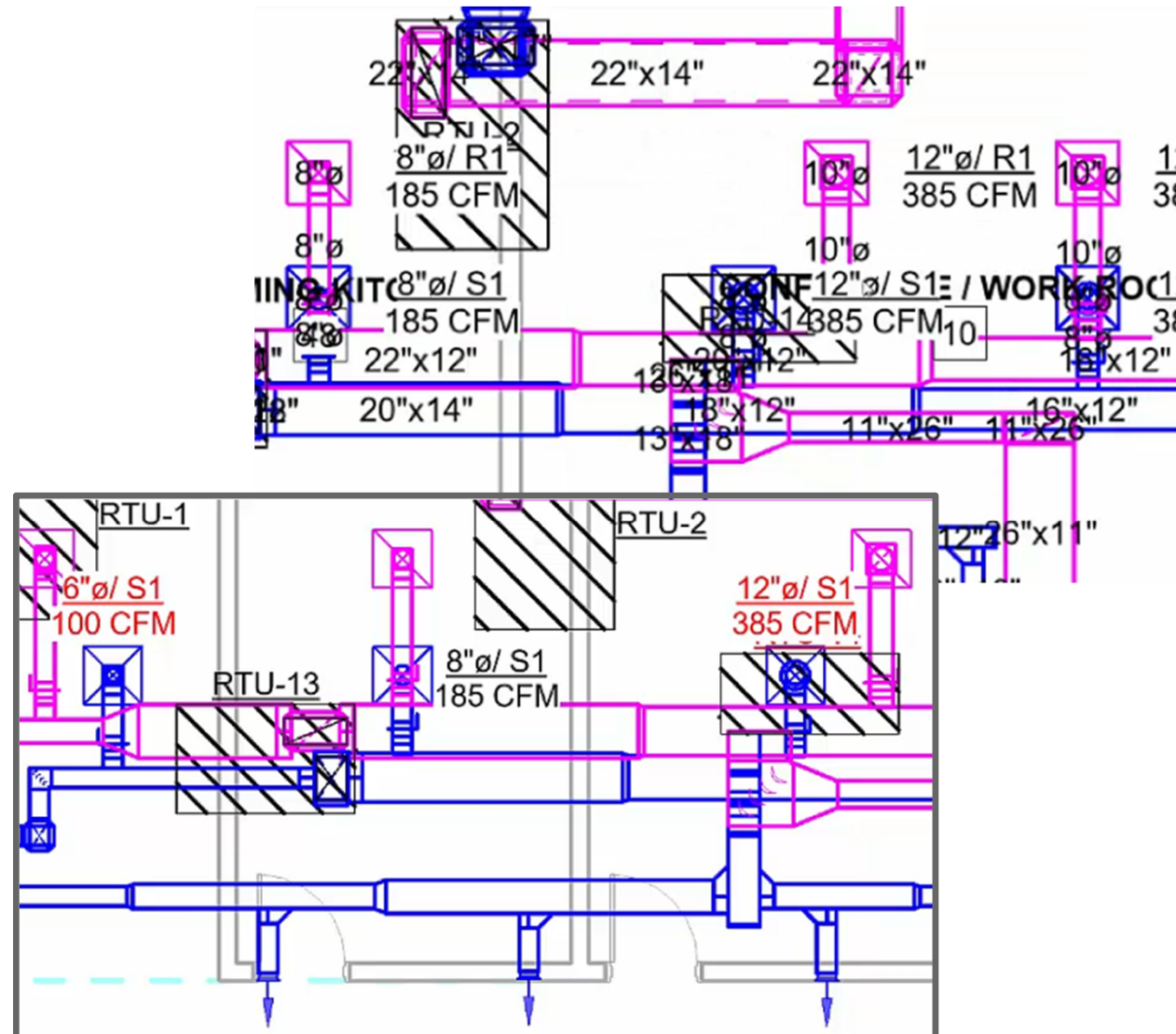
- 78,888 Points Generated
- 39,444 Bounding Boxes
- 35,972,928 Intersection Checks

At the bottom of the interface, there is a status bar with a 'Manual' dropdown, a 'Run' button, and a message that says 'Run completed with warnings.'



# Recap

- Created a way where Dynamo can automatically place Mechanical Equipment tags in a legible location where objects are not overlapping for legibility.
- Whitespace possibilities discussed for future implementation.





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# We would love to hear from you!

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